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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,095	07/11/2001	Richard Kirchofer	017750-328	8095

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Patrick C. Keane, Esquire
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. Box 1404
Alexandria, VA 22313-1404

EXAMINER	
ISSING, GREGORY C	
ART UNIT	**PAPER NUMBER**
3662	

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/902,095	KIRCHOFER ET AL.	
	Examiner	Art Unit	
	Gregory C. Issing	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-73* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-73* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dixon in view of Greenspan, the Applicants' Admission of Prior Art and Feuerstein et al.

Dixon teaches an electronically steerable phased array antenna 301 for receiving RF signals from satellites, a navigational controller 203 for determining pointing vectors from coordinate information, and beamforming electronics 607 inherently associated with an electronically steerable phased array antenna to control the antenna elements to provide and steer antenna beams by calculation of phase weights for a patch antenna or via a Butler matrix. Any number of patch antennas may be used so as to create antenna patterns via the principles of wave interference. The satellites are disclosed as geostationary as well as non-geostationary, but are not specified as GPS. Greenspan discloses the conventionality of beamforming a GPS antenna array so as to generate a plurality of beamns in the directions of the GPS satellites while suppressing signals from interference sources. It would have been obvious to an ordinarily-skilled artisan to use the antenna system of Dixon to generate and steer beams in the directions of GPS satellites in view of the conventionality of such as suggested by Greenspan in order to suppress interference. An arrangement of the antenna elements in the fom of a center element and a plurality of surrounding elements is a clear design choice within the skill of the artisan, see applicants' specification [0037]. Additionally, the provision of a common phase center for each of the beams is obvious, if not inherent, in view of the requirement of such for processing GPS carrier phase measurements, see the applicants' specification [0069]. Furthermore, in multibeama antenna systems, such as a phased array, where all of the antenna elements cooperate to generate multiple beams, each of the beams shares a

common phase center in order to avoid destructive combining of the signals, see Feuerstein et al. If the array comprises a center element, it would be required to have a phase shift that is common to all of the beams, otherwise, it would not share a common center.

Applicants argue that the prior art fails to suggest an antenna array having a center element and a group of surrounding antenna elements wherein the center element is adjusted to the same phase shift for each of the reception lobes to maintain a phase center for the array of antenna elements. Firstly, the specification makes clear that the arrangement of antenna elements in a particular pattern would be within the skill of one of ordinary skill in the art [0037] and suggests numerous conventional designs and does not afford patentability on any one particular arrangement of antenna elements. Secondly, the specification also makes clear that the technique of applying the same phase shift to the center element of an array for each of multiple beams maintains a constant phase center which is a requirement for accurate and precise carrier phase measurements. Thus, the antenna arrangement as well as the provision of a constant phase center is disclosed by the applicants as to be respectively within the skill of the artisan and required. Additionally, Feuerstein et al teach the conventionality of a common phase center when using a phased array antenna generating multiple beams. The applicants' arguments are therefore not convincing. Furthermore, there is no indication of the alleged novelty of such a requirement in the instant application as there is no showing in the drawing and the applicants' only recently added such feature to the abstract. The statement that Figure 13 shows the claimed feature is not convincing and applicants have failed to show where in Figure 13 the alleged novelty lies. The applicants' allegation that the Office has mischaracterized the applicants' specification as prior art is not persuasive and the applicants have merely alleged that the inherency is improper but has not provided any evidence that such is true. The applicants' argument that only their specification shows the claimed antenna array having a center element and a plurality surrounding elements is not convincing as the specification clearly states that one of ordinary skill in the art could use any

conventional array. The applicants' allegation that their own specification cannot be used as a motivation to combine may be correct, however, the rejection does not use the applicants' specification as a motivation. Feuerstein et al separately provide a teaching of sharing a common phase center. Applicants' argument that Feuerstein et al is not directed to similar subject matter as Dixon and Greenspan is not persuasive; all of the disclosed prior art is directed to radio communication systems having directive beamforming.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is 703-306-4156. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory C. Issing
Primary Examiner
Art Unit 3662

gci